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Received - 2021-08-16 02:55:28 PM
Control Number - 52373
ItemNumber - 48

REVIEW OF WHOLESALE ELECTRIC	§	PUBLIC UTILITY COMMISSION
MARKET DESIGN	§	OF
	§	TEXAS

COMMENTS OF TEXAS ADVANCED ENERGY BUSINESS ALLIANCE**Executive Summary:**

TAEBA proposes the following principles for considering where policy changes are needed to protect customers, foster competition, and enhance reliability in Texas electricity markets:

- Preserve competition through an open, transparent, and fair market structure that allows all resources to provide grid services and other reliability attributes.
- Remove barriers to participation and harness the capabilities of advanced energy technologies, including distributed energy resources (DERs), to build resilience and reliability while empowering customers.
- Support the ability of large energy customers to meet their electricity needs and sustainability goals through the ERCOT market.

Concerning the specific questions posed by the Commission, we offer the following recommendations:

- Reject the proposal to apply the ORDC only to resources that commit in the day-ahead market; ensure that the definition for “dispatchable” generation is inclusive and not restricted to thermal-only generation.
- Reject the proposal that generation resources be required to offer a minimum commitment in the day-ahead market as a precondition for participating in the energy market.
- Continue to assign new and existing ancillary service costs to loads, and do not shift these costs to specific generators. Examine a suite of new forward-looking ancillary service products, including week-ahead, month-ahead, or seasonal products to improve reliability. If the Commission seeks to add flexibility to the market, we recommend consideration of seasonal reliability product, procuring additional responsive reserve, or adding flexible ramping products.
- Remove barriers to demand response, accommodate multiple business models (not just REP programs) and better incorporate these resources into wholesale markets. The Commission should leverage the extensive record of barriers to demand response in Project No. 41061.
- Eliminate the rule capping the budget for the emergency response service, which has the effect of capping participation and explore procuring the amount of emergency demand response as a percentage of peak demand.
- Allow aggregated distributed energy resources (such as electric vehicles and associated charging infrastructure, rooftop solar, energy storage, energy efficiency) to participate in wholesale markets to provide energy and help ERCOT manage inertia, voltage, and frequency.
- Pursue policies that will address the lack of transmission capacity and the increased use of generic transmission constraints within ERCOT so that customers can benefit from the lowest-cost energy and enhanced reliability energy wherever they are located.

About Texas Advanced Energy Business Alliance (TAEBA):

Texas Advanced Energy Business Alliance (TAEBA) hereby submits these comments regarding market design in the above-referenced proceeding. TAEBA includes local and national advanced energy companies seeking to make Texas's energy system secure, clean, reliable, and affordable. Advanced energy technologies include energy efficiency, energy storage, demand response, solar, wind, hydro, nuclear, and electric vehicles (EVs). Used together, these technologies and services will create and maintain a higher performing energy system — one that is reliable and resilient, diverse, and cost effective — while also improving the availability and quality of customer facing services. TAEBA's membership also includes large electricity consumers interested in increasing their purchases of advanced energy to meet business and sustainability goals.

Principles to Guide Market Design Reform:

We respectfully urge the Commission to carefully examine market reform rules that achieve the following objectives:

- 1. Preserve competition through an open, transparent, and non-discriminatory market structure that allows all resources to provide grid services and other reliability attributes.**

When considering policy options, the Commission should look to the competitive market to provide a solution to a system problem and should take all policy actions necessary to ensure that reliability is achieved through free market competition, technology innovation, and customer choice. The benefits of open and transparent competition should not be discarded as reform efforts unfold. To that end, we encourage the Commission to examine regulatory policies that are outcome-oriented and technology-agnostic. This framework will allow Texas consumers to benefit from technology innovation while receiving enhanced reliability, and avoids having the government pick technology winners and losers. This approach will also allow a wide variety of developers and sources of capital to enter the market and contribute to the reliability of the electric grid. On the other hand, technology-specific solutions often unfairly disadvantage certain technologies compared to others without any reliability benefit, raising costs on consumers without addressing actual grid needs.

- 2. Remove barriers to participation and harness the capabilities advanced energy technologies, including distributed energy resources, to build resilience and reliability while also empowering customers**

A reformed energy market should attract and support advanced energy technologies critical to providing overall system flexibility and demand flexibility. Advanced energy technologies are not only the lowest cost energy options today, but they also provide enhanced reliability and greater power system resilience in the face of extreme weather and other threats to the grid and to traditional inputs to power production. Wind, solar, demand response, energy efficiency, energy storage, and distributed energy resources (DERs), when used together, provide reliable, dispatchable, and flexible energy and grid services to electricity consumers. These technologies diversify the electricity generation mix, lower consumer costs, and reduce the reliability risks that



stem from dependence on deliveries of solid, liquid, and gas fuels for power generation. They also provide reliable and flexible performance during low frequency, high impact events on the grid, such as extreme weather conditions. Unfortunately, advanced energy resources are often disadvantaged or prevented from participating by market rules that were developed by and for incumbent providers before these technologies became widely available. For example, ERCOT market rules recently have had to change to accommodate battery energy storage and hybrid generation technologies. Rules must continue to evolve to “modernize” the grid and keep pace with innovation, changing economics, and advances in technology. The market reform process should also ensure that new barriers are not erected that would increase costs on advanced energy technologies, ultimately costing Texas consumers and businesses more by raising overall system costs.

Consumers and businesses today depend on energy that is reliable and affordable and have also come to expect continuous connectivity and extensive control. The increased need for reliability, the rising cost and human toll of blackouts, and the growing threat of cyber attacks can all be addressed through a more flexible and responsive energy system that draws on a variety of advanced energy resources and gives all participants a role in energy decisions. By optimizing the electricity infrastructure that supports Texas prosperity, and by moving toward a more diverse and dynamic energy system in which customers have the opportunity to adopt advanced energy technologies and participate in new markets, we can also foster competition and innovation that will drive down costs while meeting our evolving energy needs.

DERs such as demand response, energy efficiency, distributed generation, and battery storage are particularly essential to unlock demand-side flexibility and empowering customers. DERs include many fast-responding resources like energy storage and demand response that can provide high quality and flexible services to the grid, including ancillary services. This increased flexibility, along with their broader geographic scope, also establishes a foundation for reliably integrating ever-increasing shares of low-cost variable renewable resources. Recognizing these benefits, the Federal Energy Regulatory Commission (FERC) issued Order No. 2222 directing all grid operators under FERC jurisdiction to create frameworks to allow aggregated DERs to compete alongside traditional resources; as a result, all RTOs/ISOs already have or are currently working with stakeholders to open up markets and opportunities for aggregated DERs. Urgent action from the PUCT is needed to ensure that the ERCOT market does not fall behind and that aggregated DERs can deliver the full scope of benefits to Texas energy customers. We need DERs to bolster grid reliability in Texas and the best way to get these products into the market is by letting them compete on price and performance.

- 3. Support the ability of large energy customers to meet their electricity needs and sustainability goals through the ERCOT market.**



Texas is a leader for corporate renewable energy procurement and market changes should accommodate large energy buyers within the state who demand access to these energy technologies to meet their business and sustainability goals. In 2019, Texas projects accounted for more than a quarter of all corporate renewable energy deals signed around the world.¹ Large businesses are increasingly seeking renewable and other advanced energy resources to meet their energy needs, driven by opportunities for cost savings and cost certainty, as well as a desire to meet the expectations of their investors, employees, and customers with respect to sustainability. Satisfying this principle is a necessary and foundational prerequisite to ensuring that any new market mechanism will be durable. Aligning a future energy market with customer sustainability commitments and demand for advanced technologies is necessary to keep consumer costs low and avoid future conflicts between customers' clean energy goals and the wholesale markets operated by ERCOT. The recent power crisis has cast doubt on the ability of the ERCOT grid to provide reliable electricity, leading investors and businesses to move operations to other states.² Creating rules that make it harder for these businesses to procure clean energy in Texas, or that raise the costs for doing so by imposing additional costs on clean technologies will only exacerbate this problem, harming the Texas economy. To ensure that Texans do not lose jobs and essential economic development to other states, market rules must support both reliability and sustainability to meet consumer and business needs. This approach will also ensure that the market design is sustainable and stable as the resource mix continues to change over the next 20 years.

Responses to Specific Questions Raised by the Commission

1. **What specific changes, if any, should be made to the Operating Reserve Demand Curve (ORDC) to drive investment in existing and new dispatchable generation? Please consider ORDC applying only to generators who commit in the day-ahead market (DAM). Should that amount of ORDC - based dispatchability be adjusted to specific seasonal reliability needs?**

While some adjustments to the ORDC curve or ORDC pricing may be appropriate, proposals to remove variable generation from ORDC should be rejected. When there is scarcity, *all* generation is needed and the ORDC provides an incentive for these resources to get built and show up when needed. Any generator that performs during periods of scarcity should be compensated, as has been the case since the inception of ORDC. Changes to the ORDC that explicitly favor certain market participants could create unintended consequences and complexities within the ERCOT market. This can include financial implications for both future and existing

¹Stromstra, K., Texas is the Center of the Global Corporate Renewable Energy Market, Greentech Media (January 28, 2021), available at <https://www.greentechmedia.com/articles/read/texas-is-the-center-of-the-global-corporate-renewable-energy-market>

² DiFurio, D., Texas Loses to Oklahoma on Electric Vehicle Company Canoo's Mega-Factory. The Power Grid Cited as One Reason", The Dallas Morning News (June 17, 2021), available at <https://www.dallasnews.com/business/technology/2021/06/17/texas-loses-to-oklahoma-on-electric-vehicle-company-canoos-mega-factory-was-it-the-power-grid/>



projects relying on this stable revenue. Specifically, this could interfere with large customer power purchase agreements (PPAs) and other market agreements that are settled on Settlement Point Prices (SPPs), which include the ORDC and the reliability deployment adder. Applying the ORDC only to specific market participants would create uncertainty in bilateral contracting between buyers and sellers and harm market efficiency, transparency, and stability. This uncertainty will cause investors to leave the ERCOT market rather than restoring confidence and encouraging new investment.

We recommend that the PUCT explore a variety of products to address reliability across different timelines. If the Commission seeks to address this issue or add flexibility to the market, we recommend consideration of a seasonal reliability product, procuring additional responsive reserves, or adding flexible ramping products.

Finally, how “dispatchable” resources are defined is of paramount importance. Today, many inverter-based resources are fully controllable and able to be used on demand. In Texas and across the United States, developers are seizing the opportunity to bring efficient, dispatchable hybrid energy resources to electricity markets.³ These coupled configurations can emulate different behaviors and offer the same services as conventional “dispatchable” generators. However, hybrid resources do not fit cleanly into any existing resource category. If market rules are created around specific technologies, it will create an unclear, inconsistent, and unsustainable framework, fail to incentivize or accommodate new innovations, and prevent Texas consumers from benefitting from the full potential of the best technologies available today and tomorrow.

2. **Should ERCOT require all generation resources to offer a minimum commitment in the day-ahead market as a precondition for participating in the energy market? a. If so, how should that minimum commitment be determined? b. How should that commitment be enforced?**

No. This approach is not consistent with satisfying the reliability needs of the grid through a competitive wholesale market. A primary characteristic of a free market is the exchange of goods, not through regulatory edict but through voluntary participation. The DAM has been a voluntary market since inception and should remain voluntary. The ability to participate in the day-ahead and ancillary services markets at relatively low risk is one way that the ERCOT market already rewards dispatchable resources. A mandatory commitment requirement is not appropriate to implement in competitive wholesale markets as it would give suppliers less flexibility and choice in the market.

If the Commission were to move to require resources to offer a minimum commitment in the DAM, the commitment should be required of all resources and load. In addition, if variable generation is committing a

³ Lawrence Berkley National Laboratory, Hybrid Power Plants: Status of Installed and Proposed Projects (August 2021), available at https://eta-publications.lbl.gov/sites/default/files/hybrid_plant_development_2021.pdf



certain amount of generation in the DAM but is unable to deliver due to transmission congestion or curtailment flags from ERCOT, it should be compensated for its “lost megawatts.” At the very least, if variable generation is unable to deliver on its commitment due to issues beyond its control, it should not be penalized.

We urge the Commission to explore other options, such as having intermittent resources provide day ahead forecasts to ensure reliability in the DAM.

3. **What new ancillary service products or reliability services or changes to existing ancillary service products or reliability services should be developed or made to ensure reliability under a variety of extreme conditions? Please articulate specific standards of reliability along with any suggested AS products. How should the costs of these new ancillary services be allocated?**

TAEBA recommends that the Commission explore what ancillary service products are needed, not only at the wholesale level but also for distribution level needs. As the resource mix in ERCOT continues to change, the integration of flexibility services will be more crucial. Currently, load-side resources are only able participate in limited buckets such as the responsive reserves or emergency response service (ERS). As the grid continues to evolve, we will need automated load response services which DERs are able to provide. Based on that evaluation, the PUCT should develop a suite of flexibility solutions spanning wholesale and distribution level services to enable the integration and firming of intermittent renewable resources. Eligibility for any new ancillary services should be technology neutral and allow all resource types to compete on price and performance. Battery energy storage should also be considered when determining additional ancillary service needs; additional storage resources may alleviate the need for new ancillary services. We also urge the Commission to examine a suite of new forward-looking ancillary service products, such as week-ahead, month-ahead, or seasonal products to improve reliability. Separately, if additional ancillary services are suggested due to renewable forecast error, the Commission and ERCOT should work together on ways to reduce forecast error..

Regarding cost allocation, the current structure whereby cost is assigned to load is the most efficient and cost-effective method for paying for ancillary services and maintaining the current approach would be of most benefit to Texas consumers. If new ancillary services are needed, they should be justified by the need to maintain the safe and reliable operation of the grid, as determined by ERCOT; developed in a non-discriminatory manner; and allocated on the basis of cost causation. Load has historically borne the cost of ancillary services, because load can be highly variable and ancillary services provide grid reliability to the benefit of all users on the system. As the Independent Market Monitor and ERCOT have consistently shown in annual reports, ancillary service costs comprise a very small portion of a customer’s “all-in” electricity price.⁴ The need for ancillary services is caused by thermal generation, variable generation, and load, all of which is variable in

⁴ Potomac Economics, 2019 State of the Market Report for the ERCOT Electricity Markets (March 2019), available at <https://www.potomaceconomics.com/wp-content/uploads/2020/06/2019-State-of-the-Market-Report.pdf>



nature. If the Commission decides to alter cost assignment, ancillary service costs should be borne by all market beneficiaries, including thermal generation. Specific generation technologies should not bear the financial burden of maintaining the grid's ancillary services when the value of those services accrue to all users. Further, if the Commission assigns new costs to existing assets (those with off-take agreements and merchant generation), cost recovery could prove difficult and could make some assets uneconomic. If generators are required to pay for ancillary services, those costs will ultimately be pushed back out to consumers, resulting in higher electricity prices with no improvement in grid reliability. This approach would drive out low-cost energy resources and create additional complexities in the market, ultimately increasing costs on consumers. The shift in ancillary series cost allocation could even lead to an erosion of reliability if existing assets are retired and/or assets under development are scrapped.

4. Is available residential demand response adequately captured by existing retail electric provider (REP) programs? Do opportunities exist for enhanced residential load response?

No, available REP programs do not capture available residential demand response adequately. For example, smart thermostats have been adopted by over a million homes in Texas⁵ yet only 6-10 percent of residential smart thermostat load participates in demand response programs.⁶ This leaves 90 percent or more of the flexible load resources attached to these thermostats unable to be utilized to respond to grid reliability needs. Given the reliability emergencies of this past year, greater utilization of flexible load resources could significantly increase emergency preparedness and prevent ERCOT and utilities from having to take drastic measures such as rolling blackouts which have severe consequences. For these resources to participate more widely, their services must be sufficiently valued and fairly compensated. The Commission has already developed an extensive record detailing the barriers to demand response (DR) resources in ERCOT through Project No. 41061 (Rulemaking Demand Response in the Electric Reliability Council of Texas Market).⁷ Now is the time to take advantage of the recommendations provided by stakeholders and develop market solutions to address these barriers. We also recommend that the Commission set a goal of developing DR programs that total at least 10 percent of system residential peak load.

Additionally, DR should not be limited to REP programs. There is a need to allow multiple DR business models to thrive for maximum competition and consumer benefits. The lack of participation options has stymied the ability of DR providers to contribute to the future reliability of the electric grid and the efficiency of ERCOT's

⁵ Park Associates (January 2018), available at <http://www.parksassociates.com/blog/article/pr-06142017#:~:text=New%20Parks%20Associates%20research%20shows,by%20the%20end%20of%202017>

⁶ Estimate based on reported enrollment numbers from DER management system providers and thermostat manufacturers

⁷ Public Utility Commission of Texas, Project No. 41061 (Rulemaking Demand Response in the Electric Reliability Council of Texas Market), available at <https://interchange.puc.texas.gov/Search/Filings?ControlNumber=41061>



wholesale markets. In recent years, the diversity of residential DR technologies and their capabilities have expanded dramatically. New types and applications of DR have emerged, giving customers the power to use smart thermostats, energy storage, water heaters, and electric vehicles as demand response resources to help balance the grid. These flexible, customer-facing technologies can respond in near real-time to market signals and allow consumers to respond to price signals. Enrolling aggregations of these devices in wholesale markets and allowing them to increase or decrease load according to system needs would bring significant reliability and cost benefits.

If DERs and DR are not able to participate directly in the wholesale markets, ERCOT will also have to become more adept at forecasting growing behind-the-meter technology deployment. Customers will continue to make technology choices that best serve their needs and will deploy those resources at their premises, which ultimately alters the load forecast – a process that is not entirely transparent to ERCOT. Creating “in market” solutions would entail allowing load resources, including aggregations, to bid into markets and compete to provide services alongside other supply-side resources. As described in more detail below, allowing these aggregated DERs (including DR) can increase visibility into resource behavior and bolster reliability.

5. How can ERCOT's emergency response service program be modified to provide additional reliability benefits? What changes would need to be made to Commission rules and ERCOT market rules and systems to implement these program changes?

ERS is a well-established emergency DR program that has helped ensure grid reliability for years. In the recent winter event, ERS was deployed by ERCOT as one of its first lines of defense as generation units were tripping off. In Summer 2019, ERS deployment enabled ERCOT to avoid going beyond Energy Emergency Alert Level 1 (EEA1). ERS also kept the lights on during the Polar Vortex event in 2014. While ERS is not a “silver bullet” and by itself would not have kept the system from reaching EEA Level 3 given the severity of the event, DR is an integral part of the reliability toolbox that grid operators can use when stabilizing the system. However, the potential for ERCOT’s ERS program is limited by the PUCT rule capping the budget for the service, which has the effect of capping participation. Following Winter Storm Uri, TAEBA filed a letter to the Commission stating that urgent action is necessary to eliminate the budget cap so that ERS providers can immediately begin the process of enrolling customers for the next contract period.⁸ We reiterate the immediate need for this “no-regrets” action that the Commission can take to make households, community institutions, and the grid itself more resilient.

⁸ Letter to Chairman D’Andrea Regarding Emergency Response Service and Distributed Energy Resources, PUCT Project No. 51812 (March 15, 2021), available at <https://interchange.puc.texas.gov/Search/Filings?ControlNumber=51812>



While energy demand has continued to increase in ERCOT, the budget cap has remained the same. TAEBA encourages the Commission to examine procuring the amount of ERS as a percentage of peak demand. Currently, ERCOT procures approximately 4 GWs of cumulative demand response (approximately 5 percent of peak load).⁹ This is drastically lower than other RTOs/ISOs such as the Midcontinent Independent System Operator (MISO) and PJM Interconnection where demand response provides approximately 11.3 percent and 7 percent of peak load, respectively.¹⁰ Additionally, the current enrollment and operational requirements for ERS should also be reconsidered to allow more DR resources to participate.

6. How can the current market design be altered (e.g., by implementing new products) to provide tools to improve the ability to manage inertia, voltage support, or frequency?

Demand response is not the only demand-side technology that can contribute to a more secure, clean, reliable, and affordable grid. DERs such as electric vehicles and associated charging infrastructure, rooftop solar, energy storage, energy efficiency can bolster grid reliability and resilience, while lowering energy bills for Texans. TAEBA recommends that the PUCT commit to a policy of accelerating the expansion of DERs throughout the state, including ensuring that customers who invest in these technologies can participate in wholesale markets, individually or as part of an aggregation. Altering the market design to allow these aggregated DERs to participate will increase the tools at ERCOT's disposal to manage inertia, voltage, and frequency. Both inverter-based resources and aggregated DERs are able to support these grid services, often in a more flexible manner than traditional resources. For example, starting in 2012, ERCOT required all generators (including wind and solar projects) to be able to provide primary frequency response. Since that time, there has been a significant improvement in primary frequency capability and the ability to balance supply and demand.¹¹ Similarly, energy storage resources have a successful track record in providing inertia services to the grid. However, a framework is needed to compensate these resources for the reliability benefits they provide.

The PUCT has already developed an extensive record through existing Commission proceedings such as Project Nos. 48023 (Rulemaking to Address the Use of Non-Traditional Technologies in Electric Delivery Service), 41061 (Rulemaking Demand Response in the Electric Reliability Council of Texas Market) and 49125 (Review of Issues Relating to Electric Vehicles). Now is the time to take advantage of the many recommendations for accelerating development of DERs already filed by stakeholders. Electricity customers want a more reliable and resilient electricity grid and are willing to take a more active role when responding to electricity challenges such

⁹ FERC 2020 Assessment of Demand Response and Advanced Metering at Page 20, available at https://cms.ferc.gov/sites/default/files/2020-12/2020%20Assessment%20of%20Demand%20Response%20and%20Advanced%20Metering_December%202020.pdf

¹⁰ *Ibid.*

¹¹ ERCOT, Frequency Control and Grid Resiliency (2018), available at <https://www.energy.gov/sites/prod/files/2018/07/f53/2.1.2%20Frequency%20Response%20Panel%20-%20Sharma%2C%20ERCOT.pdf>



as extreme weather events. For electric vehicles, vehicle to grid integration and managed/smart charging could provide significant value to the grid if a market structure is put in place that allows them to participate and values them appropriately. DER technologies can empower Texans, but only if market rules allow these flexible resources to flourish.

Finally, we urge the Commission to pursue policies that will address the lack of transmission capacity and the increased use of generic transmission constraints within ERCOT. Addressing transmission constraints will provide increased market access to a diverse supply of resources so that Texas customers can benefit from the lowest-cost energy and enhanced reliability energy wherever they are located in the state and ensure adequate resources during times of grid stress. Addressing transmission congestion will pay for itself many times over in avoided congestion costs (which totaled over \$2 billion in 2019 alone).¹²

Respectfully submitted,



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¹² Potomac Economics, 2019 State of the Market Report for the ERCOT Electricity Markets (March 2019), Page 47, available at <https://www.potomaceconomics.com/wp-content/uploads/2020/06/2019-State-of-the-Market-Report.pdf>

